EQUINOX®

SuperSerial™ Technology

Quick Start Installation Guide

SST Multi-modem PCI 4
SST Multi-modem PCI 8

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SST Multi-modem PCI Adapter

The Equinox *SuperSerial Technology Multi-modem Adapter (SST-MM4P, SST-MM8P)* allows the connection of up to 8 internal modems directly to SCO OpenServer, SCO UnixWare, Linux, Citrix WinFrame, Citrix MetaFrame, Windows Terminal Server, Windows NT, or Windows 2000 operating systems. The basic components for an Equinox SST Multi-modem Adapter include:

- One *SST-MM4P (PN 990400 or 990414 (INTL CTR21)) or SST-MM8P (PN990401 or 990415 (INTL CTR21)) Multi-modem Card*
- One *Equinox SuperSerial Software CD-ROM*

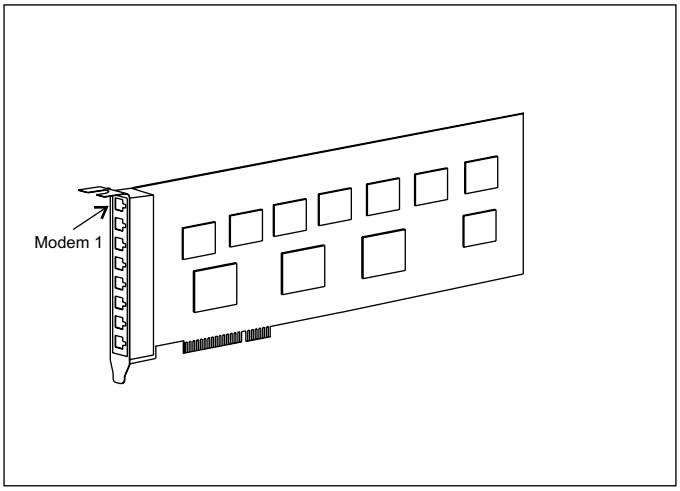

Figure 1. Equinox Multi-modem Card

Up to four *SST Multi-modem Adapters* can be installed in a system, providing up to 32 internal modems per server.

Multi-modem Adapter

The *SST Adapter Card* (see Figure 1) occupies a single PCI bus slot in the host computer and provides the intelligent communications functions to "off-load" virtually all the serial communications burden from the system. Four and eight port Multi-modem PCI bus SST Adapters are available for systems using SCO OpenServer, SCO UnixWare, Linux, Citrix WinFrame, Citrix MetaFrame, Windows Terminal Server, Windows NT, or Windows 2000 operating systems.

Modem Configuration Files

The *Equinox SuperSerial Software CD-ROM* included in your package contains the Modem Configuration Files for Windows 2000, Windows NT 4.0, and Windows NT 3.51. To use the Multi-modem Adapter under Windows NT 3.51 or Citrix WinFrame 1.7, the modem.inf file must be modified to include the Equinox modems. The modem.inf must be changed in two separate places in the Windows NT driver files. There is a file named modeminf.txt and the contents of the this file must be copied into the modem.inf file. RAS has to be installed prior to making these changes.

Hardware Installation

Use the following procedure to install your SST Multi-modem Adapter. As an alternative, you may follow the installation instructions presented in your host system documentation.

1. Set the host computer system power switch to OFF and disconnect the power cord.
2. Locate a free PCI expansion slot.
3. Insert and secure the card firmly into the expansion slot.
4. Replace the power cord and turn the host computer system ON.
5. Install the device driver software (see CD-ROM for details).
6. Connect telephone cables to the modems.

PCI System Setup

Peripheral Component Interconnect (PCI) system architecture has a design feature termed *Plug and Play*. This feature automatically detects, identifies, and configures all ***currently*** installed devices each time the system is booted. Therefore, whenever an adapter is installed (or removed) in a PCI system, it is recognized and configured immediately upon restart.

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Modem Configuration

Windows 2000

1. Log into your local console as ADMINISTRATOR.
2. When the *Hardware Wizard* has detected the new hardware nd displays the *Found New Hardware* Dialog box, click the *Next* button.
3. Select the option to *Search for a suitable driver for my device*, and click the *Next* button.
4. Choose the location of the driver files or specify the path to them. If using the installation diskettes, insert Disk into the floppy drive and check the option *Floppy disk driver*. Click the *Next* button.
5. The following window will show the *Equinox SST Multi-modem PCI Adapter* installed and it will find the file *asynceqn.inf*. Click the *Next* button.
6. If the *Digital signature Not Found* window comes up during installation, select *Yes* to continue the installation.
7. Once the driver is installed, click *Finish* and restart the server.
8. After rebooting, the ports will begin to install.
9. When the ***Equinox V.90 Multi-modems*** are found, repeat steps 2, 3, 4, and 6.

Windows NT 4.0

NOTE: The SuperSerial Driver must be installed before installing the modems as outlined below. (Please refer to the documentation on the SuperSerial CD-ROM for specific Driver installation instructions).

1. Log in to your local console as ADMINISTRATOR; click the START button.
2. Select SETTINGS, then CONTROL PANEL.
3. Click on the MODEM ICON.
4. At the INSTALL NEW MODEM, click *Next*.
5. NT will autodetect your modem.
6. Highlight the ***Equinox V.90 Multi-modem*** modem and click *Next.*
7. Your modem will be detected as ***Equinox V.90 Multi-modem***.
8. When you are prompted to assign the modem to a COM port(s), make your selection, click *Next* and then *Finish*.

9. If you have installed RAS, you will be prompted to update RAS modem assignments. Follow the on-screen instructions for this configuration.

Windows NT 3.51

NOTE: The SuperSerial Driver must be installed before installing the modems as outlined below. (Please refer to the documentation on the SuperSerial CD-ROM for specific Driver installation instructions).

1. Log in to your local console as ADMINISTRATOR.
2. Follow the standard Windows NT 3.51 procedures to add modems to your OS and RAS.
3. Your new modems will be identified as ***Equinox V.90 Multi-modem.***

SCO OpenServer and UnixWare

NOTE: The SuperSerial Driver must be installed before installing the modems as outlined below. (Please refer to the documentation on the SuperSerial CD-ROM for specific Driver installation instructions).

- Set up modem ports by following the SCO Serial Manager and Modem Manager instructions to complete the installation.

Please refer to the Equinox Knowledge Base (www.equinox.com) for additonal information.

Linux

Note: This example is based on Red Hat kernels. Please check your system documentation for file locations and options specific to your system.

- Edit /etc/inittab to enable ports:

```
A1:2345:respawn:/sbin/mgetty  ttyQ1a1  -s  115200  -D
A2:2345:respawn:/sbin/mgetty  ttyQ1a2  -s  115200  -D
                    ... etc.
```

Where:

A1 = getty number or device number (you can place anything here, e.g. letters (A1), names (ttyQ1a1), etc.

2345 = run levels that you want this getty to run in.

respawn = enable this modem every time your system runs.

/sbin/mgetty = for modems, you must use mgetty. If you do not have mgetty installed, you must install it.

ttyQ1a1 = (actual device name) This is how our ports are named in Linux. "ttyQ1a1, ttyQ1a2, ttyQ1a3", and so on.

-s 115200 = actual modem speed you want to use.

-D = data only.

At any time if you want to stop these gettys from running, simply go back into the /etc/inittab file and place a # in front of the line and then save the file, and then type in the command init q.

- To enable mgetty's ppp auto negotiation feature, you must edit the file *login.conf*, typically found under **/etc/mgetty+sendfax/**

uncomment or add, as necessary, the following:

```
/AutoPPP/ - a_ppp /usr/sbin/pppd auth -chap + pap login
```

NOTE: The ppp package must have been compiled with the option

- DAUTO_PPP (*default compile* for most packages)

- Check your system documentation for file locations and options specific to your system.

Command Line Syntax and Response Codes

The modem responds to commands from the DTE and to activity on the line by signalling to the DTE in the form of result codes. The result codes that the modem can send are described below.

Two forms of each result code are available: long-form, an English-like "verbose" response, and short-form, a data-like numeric response. The long-form code is preceded and terminated by the sequence <CR><LF>.

The short-form is terminated by <CR> only, with no preceding sequence. If result messages are suppressed, nothing is returned to the DTE.

00 - OK
01 - CONNECT
02 - RING
03 - NO CARRIER
04 - ERROR
05 - CONNECT 1200
06 - NO DIALTONE
07 - BUSY
08 - NO ANSWER
09 - CONNECT 600
10 - CONNECT 2400
11 - CONNECT 4800
12 - CONNECT 9600
13 - CONNECT 7200
14 - CONNECT 12000
15 - CONNECT 14400
16 - CONNECT 19200
17 - CONNECT 38400
18 - CONNECT 57600
19 - CONNECT 115200
22 - CONNECT 75TX/ 1200RX
23 - CONNECT 1200TX/ 75RX
33 - FAX
35 - DATA
40 - CARRIER 300
44 - CARRIER 1200/75
45 - CARRIER 75/1200
46 - CARRIER 1200
47 - CARRIER 2400
48 - CARRIER 4800
49 - CARRIER 7200
50 - CARRIER 9600
51 - CARRIER 12000
52 - CARRIER 14400
53 - CARRIER 16800
54 - CARRIER 19200
55 - CARRIER 21600
56 - CARRIER 24000
57 - CARRIER 26400
58 - CARRIER 28800
59 - CARRIER 31200
60 - CARRIER 33600
61 - CONNECT 21600
62 - CONNECT 24000
63 - CONNECT 26400
64 - CONNECT 28800
66 - COMPRESSION: CLASS 5
67 - COMPRESSION: V.42 bis
69 - COMPRESSION: NONE
70 - PROTOCOL: NONE
77 - PROTOCOL: LAP-M
80 - PROTOCOL ALT
84 - CONNECT 33600
91 - CONNECT 31200
150 - CARRIER 32000
151 - CARRIER 34000
152 - CARRIER 36000
153 - CARRIER 38000
154 - CARRIER 40000
155 - CARRIER 42000
156 - CARRIER 44000
157 - CARRIER 46000
158 - CARRIER 48000
159 - CARRIER 50000
160 - CARRIER 52000
161 - CARRIER 54000
162 - CARRIER 56000
165 - CONNECT 32000
166 - CONNECT 34000
167 - CONNECT 36000
168 - CONNECT 38000
169 - CONNECT 40000
170 - CONNECT 42000
171 - CONNECT 44000
172 - CONNECT 46000
173 - CONNECT 48000
174 - CONNECT 50000
175 - CONNECT 52000
176 - CONNECT 54000
177 - CONNECT 56000
178 - CONNECT 23400
180 - CONNECT 28000
181 - CONNECT 29333
182 - CONNECT 30667
183 - CONNECT 33333
184 - CONNECT 34667
185 - CONNECT 37333
186 - CONNECT 38667
187 - CONNECT 41333
188 - CONNECT 42667
189 - CONNECT 45333
190 - CONNECT 46667
191 - CONNECT 49333
192 - CONNECT 50667
193 - CONNECT 53333
194 - CONNECT 54667

Modem Commands

The modem will respond to the commands detailed below. Parameters applicable to each command are listed with the command description. The defaults shown for each configuration command are those used in the factory profile 0.

Standard "AT" Commands:

A/	Re-execute command
A	Go off-hook and attempt to answer a call
B0	Select V.22 connection at 1200 bps
B1	Select Bell 212A connection at 1200 bps
C1	Return OK message
Dn	Dial modifier
E0	Turn off command echo
E1	Turn on command echo
H0	Initiate a hang-up sequence
H1	If on-hook, go off-hook and enter command mode
I0	Report product code
I1	Compute and report checksum
I2	Compute checksum and report result of comparison to presented checksum
I3	Report firmware revisions, model and interface type
I4	Report response programmed by an OEM
I5	Report the country code parameter
I6	Report modem data pump model and code revision
L0	Set low speaker volume
L1	Set low speaker volume
L2	Set medium speaker volume
L3	Set high speaker volume
M0	Turn speaker off
M1	Turn speaker on during handshaking and turn speaker off while receiving carrier
M2	Turn speaker on during handshaking and while receiving carrier
M3	Turn speaker on during dialing; receiving carrier, turn speaker on during answering
N0	Turn off automode detection
N1	Turn on automode detection

O0	Go on-line
O1	Go on-line and initiate a retrain sequence
P	Force pulse dialing
Q0	Allow result codes to DTE
Q1	Inhibit result codes to DTE
Sn	Select S-Register as default
Sn?	Return the value of S-Register n
=v	Set default S-Register to value v
?	Return the value of default S-Register
T	Force DTMF dialing
V0	Report short form (terse) result codes
V1	Report long form (verbose) result codes
W0	Report DTE speed in EC mode
W1	Report line speed, EC protocol and DTE speed
W2	Report DCE speed in EC mode
X0	Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER, (also for busy, if enabled, and dial tone detected), NO ANSWER and ERROR
X1	Report basic call progress result codes and connections speeds (OK, CONNECT, RING, NO CARRIER, (also for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX and ERROR
X2	Report basic call progress result codes and connections speeds, i.e., OK, CONNECT, RING, NO CARRIER (also for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX and ERROR
X3	Report basic call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, ERROR
X4	Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE, ERROR
Y0	Disable long space disconnect before on-hook
Y1	Enable long space disconnect before on-hook
Z0	Restore stored profile 0 after warm reset
Z1	Restore stored profile 1 after warm reset
&C0	Force RLSD active regardless of the carrier state
&C1	Allow RLSD to follow the carrier state

&D0	Interpret DTR ON-to-OFF transition per &Qn:	
	&Q0, &Q5, &Q6	Modem ignores DTR
	&Q1, &Q4	Modem hangs up
	&Q2, &Q3	Modem hangs up
&D1	Interpret DTR ON-to-OFF transition per &Qn:	
	&Q0, &Q1, &Q4, &Q5, &Q6	Asynchronous escape
	&Q2, &Q3	Modem hangs up
&D2	Interpret DTR ON-to-OFF transition per &Qn:	
	&Q0, &Q6	Modem hangs up
&D3	Interpret DTR ON-to-OFF transition per &Qn:	
	&Q0, &Q1, &Q4, &Q5, &Q6	Modem performs soft reset
	&Q2, &Q3	Modem hangs up
&F0	Restore configuration 0	
&F1	Restore factory configuration 1	
&G0	Disable guard tone	
&G1	Disable guard tone	
&G2	Enable 1800 Hz guard tone	
&J0	Set S-Register response only for compatibility*	
&J1	Set S-Register response only for compatibility*	
&K0	Disable DTE/DCE flow control	
&K3	Enable RTS/CTS DTE/DCE flow control	
&K4	Enable XON/XOFF DTE/DCE flow control	
&K5	Enable transparent XON/XOFF flow control	
&K6	Enable both RTS/CTS and XON/XOFF flow control	
&L0	Select dial up line operation	
&M0	Select direct asynchronous mode	
&P0	Set 10 pps pulse dial with 39% / 61% make/break	
&P1	Set 10 pps pulse dial with 33% / 67% make/break	
&P2	Set 20 pps pulse dial with 39% / 61% make/break	
&P3	Set 20 pps pulse dial with 33% / 67% make/break	
&Q0	Select direct asynchronous mode	
&Q5	Modem negotiates an error connected link	
&Q6	Select asynchronous operation in normal mode	
&R0	CTS tracks RTS (async) or acts per V.25 (sync)	

&R1	CTS is always active
&S0	DSR is always active
&S1	DSR acts per V.25
&T0	Terminate any test in process
&T1	Initiate local analog loopback
&T2	Returns ERROR result code
&T3	Initiate local digital loopback
&T4	Allow remote digital loopback
&T5	Disallow remote digital loopback request
&T6	Request an RDL without self-test
&T7	Request an RDL with self-test
&T8	Initiate local analog loop with self-test
&V	Display current configurations
&W0	Store the active profile in NVRAM profile 0
&W1	Store the active profile in NVRAM profile 1
&Y0	Recall stored profile 0 upon power up
&Y1	Recall stored profile 1 upon power up
&Zn=x	Store dial string x to location n (0 to 3)
%E0	Disable line quality monitor and auto retrain
%E1	Enable line quality monitor and auto retrain
%E2	Enable line quality monitor and fallback forward
%L	Return received line signal level
%Q	Report the line signal quality
\Kn	Controls break handing during three states

When modem receives a break from the DTE:

\K0,2,4	Enter on-line command mode, no break sent to the remote modem
\K1	Clear buffers and send break to remote modem
\K3	Send break to remote modem immediately
\K5	Send break to remote modem in sequence with transmitted data

When modem receives \B in on-line command state:

\K0,1	Clear buffers and send break to remote modem
\K2,3	Send break to remote modem immediately
\K4,5	Send break to remote modem in sequence with transmitted data

* North America only

Modem's S-Registers

Register	Function	Range/Unit	Default
S0	Number of Rings to Auto Answer	0-255/rings	0
S1	Ring Counter	0-255/rings	0
S2	Escape Character	0-255/decimal	43
S3	Carriage Return Character	0-127/decimal	13
S4	Line Feed Character	0-127/decimal	10
S5	Backspace Character	0-32/ASCii	8
S6	Wait time for Dial Tone before Blind Dialing	2-255/seconds	2
S7	Wait timer for Carrier after Dial, for silence, or for Dial Tone after "W" Dial Modifier	1-255/seconds	50
S8	pause Time for Dial Delay	0-255/seconds	2
S9	Carrier Detect Response Time	1-255/seconds	6
S10	Lost Carrier to Hang Up Delay	1-255/seconds	14
S11	DTMF Tone Duration	50-255/ miliseconds	95
S12	Escape Code Guard Time	0-255/seconds	50
S13	Reserved		
S14	General Bit Mapped Options		138
S15	Reserved		
S16	General Bit Mapped Test Options		0
S17	Reserved		
S18	Test Timer	0-255/seconds	0
S19	Reserved		
S20	Reserved		
S21	V.24/General Bit Mapped Options		4
S22	Speaker/Results Bit Mapped Options		117
S23	General Bit Mapped Options		55
S24	Sleep Inactivity Timer	0-255/seconds	0
S25	Delay to DTR	0-255/seconds	5
S26	RTS to CTS Delay	0-255/seconds	1
S27	Bit Mapped Options		74
S28	Bit Mapped Options		0
S29	Flash Dial Modifier Time	0-255/ miliseconds	70
S30	Disconnect Inactivity Timer	0-255/seconds	0
S31	Bit Mapped Options		194
S32	XON Character		17
S33	XOFF Character		19
S34	Reserved		
S35	Reserved		
S36	Reserved		
S37	Desired Line Connection Speed		0
S38	Reserved		
S39	Flow Control		3
S40	Reserved		
S41	General Bit Mapped Options		

Modem's S-Registers con't

Register	Function	Range/Unit	Default
S46	Data Compression Control	136 or 138	138
S48	V.42 Negotiation Action	0, 7, or 128	7
S82	Break Handling Option	3, 7, or 128	128
S91	PSTN Transmit Attenuation Level	0-15/dBm	10
S92	Fax Transmit Attenuation Level	0-15/dBm	10

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Federal Communication Commission (FCC) Statement

Connection to party line service is subject to state tariffs. (Contact the state public utility commission, pulic service commission, or corporation commission for information).

This equipment complies with Part 68 of the FCC Rules. On the Rear Circuit Side of this equipment is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment.

The registration jack USOC for the equipment is RJ11C.

This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is Part 68 compliant. See installation instructions for details.

The REN is useful to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs of all devices should not exceed five (5). To be certain of the number of devices that may be connected to a line, as determined by the RENs, contact the local telephone company.

If the SST Multi-modem adapters cause harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. However, if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

In you experience trouble with the SST-MM4/8P, please contact Equinox Customer Support at (954) 746-9000, ext: 322 for repair/warranty information. If your equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Repairs customers can make:
This equipment is not user serviceable. For repair, contact Customer Support at number indicated above.

Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.
This equipment may not be used on public coin service provided by the

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

> Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.
>
> Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.
>
> Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

telephone company. Connection to party lines is subject to state tariffs. (Contact your state public utility commission or corporation commission for information).

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that inference will not occur in a particular installation. If this equipment does cause harmful interference to radio or telelvisioin reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the seperation between the equipment and the receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced technican for assistance.

Note: The provided cable accessories must be used with this unit to ensure compliance with the FCC Class B limits (See Instruction Sheet, 302111).

> WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communicaitons du Canada.

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